

Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application:

1-10 (canceled)

11. (currently amended) A gateway support node comprising one or more receivers, one or more detectors, one or more controllers and one or more recovery elements, the gateway support node configured to:

provide an interface between an external packet data communications network and a packet radio network, the packet radio network providing a plurality of packet data bearers for communicating internet packets with nodes attached to the packet radio network, each of the packet data bearers being defined with respect to a source home address of nodes communicating the internet packets, the gateway support node being further configured to receive an internet packet with the one or more receivers, the internet packet comprising:

a header field, the header field including:

a source field identifying a source address of the internet packet,

a destination field identifying a destination address of the internet packet,

and

a next header field identifying whether an extension header follows the header field, a type of the extension header, and whether the extension header includes a hop-by-hop extension header, the hop-by-hop extension header comprising:

a router alert option header indicating that the hop-by-hop extension header is optional for a router to read, and

a value field indicating that the remainder of the hop-by-hop header is provided for the gateway support node, wherein the remainder of the hop-by-hop extension header includes a home field providing a home address of a mobile node,

to detect that the next header field of the internet packet includes the hop-by-hop extension header with the one or more detectors, and

to detect the router alert option header in the hop-by-hop extension header[[,]] and the value field indicating that the remainder of the hop-by-hop extension header is provided for the

gateway support node with at least one of the one or more detectors, and upon detecting the value field indicating that the remainder of the hop-by-hop extension header field is for the gateway support node,

to recover information from a field provided in the remainder of the hop-by-hop extension header with the one or more recovery elements for use in controlling egress and/or ingress of internet packets to the packet radio network in accordance with the information, and

to control ingress of internet packets from the external communications network to the packet data bearers of the packet radio network with the one or more controllers by:

detecting from the information field provided in the remainder of the hop-by-hop extension header, a source home address of a mobile correspondent node communicating the internet packets,

using the source home address of the mobile correspondent node to identify the packet data bearer for communicating the internet packets to a correspondent node attached to the packet radio network, and

allowing ingress of the internet packets to the identified packet data bearer, the gateway support node being operable upon receipt of the internet packet.

12. (previously presented) A gateway support node as claimed in Claim 11, the gateway support node

allowing ingress of the internet packets if either the address in the source address field of the internet packet or the address provided in the field in hop-by-hop extension header for the gateway support node corresponds to a packet data bearer.

13. (previously presented) A gateway support node as claimed in Claim 11, the gateway support node

performing egress packet filtering in accordance with a destination address of the internet packets received from the plurality of packet data bearers, egress of the internet packets being allowed for internet packets having a legitimate destination address, and upon receipt of the internet packet,

detecting from the information data provided in the hop-by-hop extension header field for the gateway support node a destination home address of a mobile correspondent node which is to be the destination of the internet packets, and

allowing egress of the internet packets if the gateway support node recognizes the destination home address as a legitimate home address.

14. (previously presented) A gateway support node as claimed in Claim 13, the gateway support node allowing egress of the internet packets if either the address in the destination address field of the packet or the address provided in the hop-by-hop extension header for the gateway support node is a legitimate destination address.

15. (previously presented) A gateway support node as claimed in Claim 11, wherein the gateway support node comprises a Gateway GPRS Support Node (GGSN), according to the General Packet Radio System standard.

16. (previously presented) A packet radio network for communicating internet packets between an external packet data network and nodes associated with the packet radio network, the packet radio network providing a plurality of packet data bearers for communicating the internet packets to and/or from the nodes attached to the packet radio network, the packet radio network including a gateway support node as claimed in Claim 11.

17. (previously presented) A packet radio network as claimed in Claim 16, wherein the packet radio network complies with the General Packet Radio System (GPRS) standard, the gateway support node comprising a Gateway GPRS Support Node (GGSN).

18. (previously presented) A method of operating a gateway support node to interface between an external packet data communications network and a packet radio network, the packet radio network providing a plurality of packet data bearers for communicating the internet packets with nodes attached to the packet radio network, each of the packet data bearers being defined with respect to a source home address of the nodes communicating the internet packets, the method comprising

receiving an internet packet comprising a header field, the header field including a field identifying a source address of the internet packet, a field identifying a destination address of the internet packet and a next header field identifying whether an extension header follows the header and a type of the extension header, the next header field identifying that the extension header includes a hop-by-hop extension header, the hop-by-hop extension header including a

router alert option header indicating that the hop-by-hop extension header is optional for a router to read, and a value field indicating that the remainder of the hop-by-hop header is provided for the gateway support node of the packet radio network, the remainder of the hop-by-hop extension header including a field providing a home address of a mobile node,

detecting that the next header field of the internet packet identifying that an extension header includes the hop-by-hop extension header,

detecting the router alert option header and the value field in the hop-by-hop extension header indicating that the remainder of the hop-by-hop header is provided for the gateway support node, and upon detecting the value field indicating that the remainder of the hop-by-hop extension header field is for the gateway support node,

recovering from a field provided in the remainder of the hop-by-hop extension header information for use in controlling egress and/or ingress of internet packets to the packet radio network in accordance with the information,

wherein, the controlling the ingress of internet packets from the external communications network to the packet data bearers of the packet radio network in accordance with the information, includes

detecting from the information field provided in the remainder of the hop-by-hop extension header field a source home address of a mobile correspondent node communicating the internet packets, using the source home address of the mobile correspondent node to identify the packet data bearer for communicating the internet packets to a correspondent node attached to the packet radio network, and

allowing ingress of the internet packets to the identified packet data bearer, and otherwise dropping the internet packet.

19. (previously presented) A method as claimed in Claim 18, the method comprising performing egress packet filtering in accordance with a destination address of internet packets received from the plurality of packet data bearers, egress of internet packets being allowed for internet packets having a legitimate destination address, and upon receipt of the internet packet,

detecting from information provided in the remainder of the hop-by-hop extension header field for the gateway support node a destination home address of a mobile correspondent node which is to be the destination of the internet packets, and

allowing egress of internet packets if the gateway support node recognises the destination home address as a legitimate home address.

20-23 (canceled)

24. (previously presented) A computer readable memory device comprising computer executable instructions forming a computer program to be executed by a data processor within a computer, the program comprising:

receiving an internet packet comprising a header field, the header field including a field identifying a source address of the internet packet, a field identifying a destination address of the internet packet and a next header field identifying whether an extension header follows the header and a type of the extension header, the next header field identifying that the extension header includes a hop-by-hop extension header, the hop-by-hop extension header including a router alert option header indicating that the hop-by-hop extension header is optional for a router to read, and a value field indicating that the remainder of the hop-by-hop header is provided for the gateway support node of the packet radio network, the remainder of the hop-by-hop extension header including a field providing a home address of a mobile node,

detecting that the next header field of the internet packet identifying that an extension header includes the hop-by-hop extension header,

detecting the router alert option header and the value field in the hop-by-hop extension header indicating that the remainder of the hop-by-hop header is provided for the gateway support node, and upon detecting the value field indicating that the remainder of the hop-by-hop extension header field is for the gateway support node,

recovering from a field provided in the remainder of the hop-by-hop extension header information for use in controlling egress and/or ingress of internet packets to the packet radio network in accordance with the information,

wherein, the controlling the ingress of internet packets from the external communications network to the packet data bearers of the packet radio network in accordance with the information, includes

detecting from the information field provided in the remainder of the hop-by-hop extension header field a source home address of a mobile correspondent node communicating the internet packets, using the source home address of the mobile correspondent node to identify the

packet data bearer for communicating the internet packets to a correspondent node attached to the packet radio network, and

allowing ingress of the internet packets to the identified packet data bearer, and otherwise dropping the internet packet.

25. (canceled)

26. (previously presented) A gateway support node as claimed in Claim 12, the gateway support node

performing egress packet filtering in accordance with a destination address of the internet packets received from the plurality of packet data bearers, egress of the internet packets being allowed for internet packets having a legitimate destination address, and upon receipt of the internet packet,

detecting from the information data provided in the hop-by-hop extension header field for the gateway support node a destination home address of a mobile correspondent node which is to be the destination of the internet packets, and

allowing egress of the internet packets if the gateway support node recognizes the destination home address as a legitimate home address.

27. (previously presented) A gateway support node as claimed in Claim 26, the gateway support node allowing egress of the internet packets if either the address in the destination address field of the packet or the address provided in the hop-by-hop extension header for the gateway support node is a legitimate destination address.

28. (previously presented) A computer readable memory device comprising computer executable instructions forming a computer program to be executed by a data processor within a computer, the program comprising:

receiving an internet packet comprising a header field, the header field including a field identifying a source address of the internet packet, a field identifying a destination address of the internet packet and a next header field identifying whether an extension header follows the header and a type of the extension header, the next header field identifying that the extension header includes a hop-by-hop extension header, the hop-by-hop extension header including a router alert option header indicating that the hop-by-hop extension header is optional for a router

to read, and a value field indicating that the remainder of the hop-by-hop header is provided for the gateway support node of the packet radio network, the remainder of the hop-by-hop extension header including a field providing a home address of a mobile node,

detecting that the next header field of the internet packet identifying that an extension header includes the hop-by-hop extension header,

detecting the router alert option header and the value field in the hop-by-hop extension header indicating that the remainder of the hop-by-hop header is provided for the gateway support node, and upon detecting the value field indicating that the remainder of the hop-by-hop extension header field is for the gateway support node,

recovering from a field provided in the remainder of the hop-by-hop extension header information for use in controlling egress and/or ingress of internet packets to the packet radio network in accordance with the information,

wherein, the controlling the ingress of internet packets from the external communications network to the packet data bearers of the packet radio network in accordance with the information, includes

detecting from the information field provided in the remainder of the hop-by-hop extension header field a source home address of a mobile correspondent node communicating the internet packets, using the source home address of the mobile correspondent node to identify the packet data bearer for communicating the internet packets to a correspondent node attached to the packet radio network, and

allowing ingress of the internet packets to the identified packet data bearer, and otherwise dropping the internet packet,

performing egress packet filtering in accordance with a destination address of internet packets received from the plurality of packet data bearers, egress of internet packets being allowed for internet packets having a legitimate destination address, and upon receipt of the internet packet,

detecting from information provided in the remainder of the hop-by-hop extension header field for the gateway support node a destination home address of a mobile correspondent node which is to be the destination of the internet packets, and

allowing egress of internet packets if the gateway support node recognises the destination home address as a legitimate home address.

29. (canceled)

30. (currently amended) A gateway support node comprising one or more receivers, one or more detectors, one or more controllers and one or more recovery elements, the gateway support node configured:

to provide an interface between an external packet data communications network and a packet radio network, the packet radio network providing a plurality of packet data bearers for communicating user data packets with nodes attached to the packet radio network, each of the packet data bearers being defined with respect to a source home address of nodes communicating the user data packets,

to receive a user data packet comprising a header field with the one or more receivers, the header field including:

- a source field identifying a source address of the user data packet,
- a destination field identifying a destination address of the user data packet and
- a next header field identifying whether an IPv6 extension header follows the header, a type of the extension header, and whether the extension header includes a hop-by-hop extension header, the hop-by-hop extension header comprising:

- a router alert option header indicating that the hop-by-hop extension header is optional for a router to read, and

- a value field indicating that the remainder of the hop-by-hop header is provided for the gateway support node, wherein the remainder of the hop-by-hop extension header includes a home field providing a home address of a mobile node,

to detect that the next header field of the user data packet includes the hop-by-hop extension header with the one or more detectors, and

to detect the router alert option header in the hop-by-hop extension header[[,]] and the value field indicating that the remainder of the hop-by-hop extension header is provided for the gateway support node with at least one of the one or more detectors, and upon detecting the value field indicating that the remainder of the hop-by-hop extension header field is for the gateway support node,

to recover information from a field provided in the remainder of the hop-by-hop extension header with the one or more recovery elements for use in controlling egress and/or

ingress of the user data packets to the packet radio network in accordance with the information, and

to control ingress of the user data packets from the external communications network to the packet data bearers of the packet radio network with the one or more controllers by:

detecting from the information field provided in the remainder of the hop-by-hop extension header a source home address of a mobile correspondent node communicating the user data packets,

using the source home address of the mobile correspondent node to identify the packet data bearer for communicating the user data packets to a correspondent node attached to the packet radio network, and

allowing ingress of the user data packets to the identified packet data bearer, the gateway support node being operable upon receipt of the user data packet.